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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/786,372	02/25/2004	Shiying Zheng	85588RLO	3400

7590

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EXAMINER

GARRETT, DAWN L

ART UNIT

PAPER NUMBER

1774

DATE MAILED: 08/04/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/786,372

Applicant(s)

ZHENG ET AL.

Examiner

Dawn Garrett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 June 2005.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.  
4a) Of the above claim(s) 2 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1 3-10 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☒ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 25 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 2-25-04.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Amendment***

1. This Office action is responsive to the response to the restriction requirement dated June 1, 2005. Claims 8-10 were added. Claims 1-10 are pending. Since applicant was required to elect a single species of polymer as set forth in the election of species requirement mailed May 17, 2005, the examiner has interpreted applicant's remarks dated June 1, 2005 regarding the addition of claims 8-10 drawn to a specific species wherein Ar, Ar<sub>1</sub>, Ar<sub>2</sub>, Ar<sub>3</sub> and Ar<sub>4</sub> are individually phenyl groups such that this is the elected species selected by applicant. Accordingly, the species under consideration at this time is a compound according to the claim formula where Ar, Ar<sub>1</sub>, Ar<sub>2</sub>, Ar<sub>3</sub> and Ar<sub>4</sub> are individually phenyl groups. Claims 1 and 3-10 read upon this species. Claim 2 is withdrawn at this time as a non-elected claim.

### ***Specification***

2. The abstract of the disclosure is objected to because the abstract should be in the form of one paragraph. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Independent claims 1, 5, and 6 and claim 2 recite "or Ar<sub>1</sub> and Ar<sub>2</sub>, Ar<sub>3</sub> and Ar<sub>4</sub>, Ar<sub>1</sub> and Ar<sub>4</sub>, Ar<sub>2</sub> and Ar<sub>4</sub> are connected through a chemical bond". The claim language appears to recite

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that each of these combinations must be present at the same time; however, this does not appear to be the case since it does not appear that Ar<sub>1</sub> could be connected to both Ar<sub>2</sub> and Ar<sub>4</sub> at the same time. Clarification and/or correction are required.

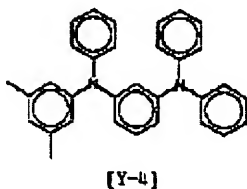
***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claims 1, 3, 4, 6-8, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujiyama et al. (JP 08-113622). Fujiyama et al. discloses polyazomethine, its production and thin film electroluminescent element (see title). Fujiyama discloses a repeat unit according to Formula [3],  $\{X - N = CH - Y - CH = N\}$  (see par. 12), wherein Y of the formula may be



(see par. 34). Formula 3 (see par. 12) shows a conjugate group immediately adjacent to the tertiary amine “Y” group. Since X may be a plurality of groups according to dependent claim 3 and the polymer described by claims 1 and 6 does not limit further groups from being present in the polymer, Formula 3 wherein Y is the above shown [Y-4] is deemed to anticipate the polymer species under consideration. Fujiyama et al. discloses the electroluminescent layer is disposed between electrodes (see par. 46).

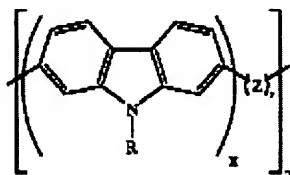
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*Claim Rejections - 35 USC § 103*

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1 and 4-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Leclerc et al. (US 6,630,254) in view of Fujiyama et al. (JP 08-113622). Leclerc et al. discloses an organic light emitting diode (OLED) comprising as an active material a compound of the following formula (see claim 12, col. 10):



wherein

R is a substituent selected from the group consisting of C<sub>1</sub>-C<sub>22</sub> linear or branched alkyl group, poly (ethyleneoxy), cyano, aryl, amide, and benzoyl;

Z is a co-monomer selected from the group consisting of ethylene, acetylene, C<sub>6</sub>-C<sub>22</sub>-aromatic groups, C<sub>2</sub>-C<sub>10</sub>-heterocyclic groups, and tertiary amines;

x is an integer between 1 and 100;

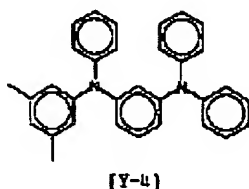
y is an integer between 0 and 100; and

n is an integer between about 3 to about 100;

wherein when y is greater than 1, each Z may be the same or different.

The carbazole group of the above compound reads upon the conjugated "X" portion of the present polymer under consideration. Z in the above Leclerc et al. formula may be a tertiary amine; however, Leclerc et al. fails to specify the tertiary amine according to the present species under consideration. Fujiyama et al. teaches in analogous art the following tertiary amine moiety for use in a light-emitting polymer (see par. 34):

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It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected any tertiary amine moiety known in the art, including the above [Y-4] moiety taught by Fujiyama et al., because Leclerc et al. generally teaches a tertiary amine may be the “Z” group of the active material polymer compound taught by Leclerc et al. With regard to claim 5, the layers of the Leclerc et al. device comprising the conjugated poly(N-alkyl-2,7,-carbazole) derivative may be doped with other hole or electron transporting materials per the polymer being doped with “other light emitting materials” (see col. 4, lines 3-8; figure 3; first example, col. 7; second example, col. 8). The active material taught by Leclerc et al. may be used as an emitter per claims 4 and 7 (see col. 4, lines 3-8).


### *Conclusion*

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
DAWN GARRETT  
PRIMARY EXAMINER  
ART UNIT 1774

D.G.  
July 29, 2005